

# 3300 RAM (Robust Air Machine)

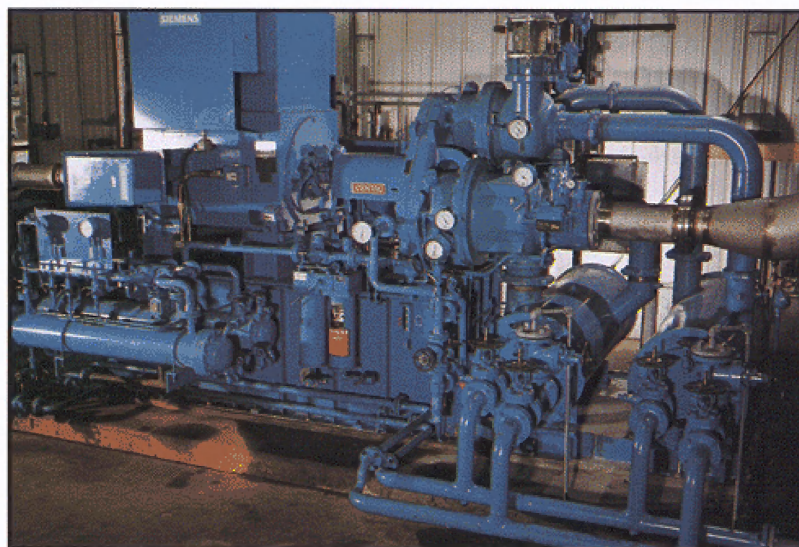
**by Bill Zubon**  
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For improved safety and efficiency, rotating machinery should be equipped with continuous monitoring to provide predictive maintenance and machine diagnostic capabilities. Before monitors can be specified, transducers must be selected, based on the type of bearings used in the machine. A noncontacting eddy current proximity transducer is the preferred sensor for fluid film bearings. This transducer accurately measures the dynamic motion of the shaft relative to the bearing and is the only device which can also measure shaft position.

The proximity transducer's primary function is to measure shaft vibration and position on a variety of rotating and reciprocating machinery. The proximity transducer provides a reliable signal for monitors and diagnostic equipment. This allows you to observe machine trends and decide on corrective action if there is a problem.

Bently Nevada has designed many successful transducer products over the past 40 years. These transducers have established the standards by which all others are measured. Our continued success has enabled us to invest in new research and development and develop a new transducer product that provides high quality and maximum durability.

We are pleased to announce a new proximity transducer system that is destined to be one of our best ever. It is the



**3300 RAM Transducer Systems are used on centrifugal air compressors.**

*Photo courtesy of the Ingersoll-Rand Company.*

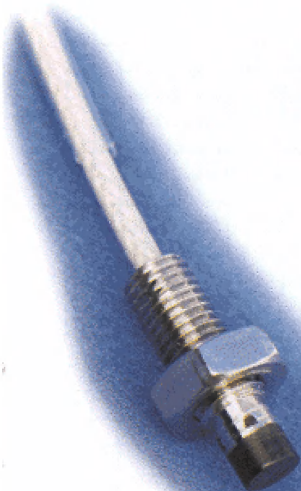
**3300 RAM Proximity Transducer System.** This new transducer is our latest **proximity probe** intended for centrifugal air compressors, process gas compressors, refrigeration compressors and other machines with tight installation requirements. The 3300 RAM Proximity Transducer System can replace our previous 190 Proximity Transducer System and has these key advantages:

- Excellent linear range: 0.25 to 1.78 mm (10 to 70 mils) for vibration and thrust position measurements
- Probe sensing area of only **2X tip diameter** for tight clearances
- The 3300 RAM Probe **has increased temperature stabil-**

**ity** over its operating range of  $-34^{\circ}$  to  $+177^{\circ}\text{C}$  ( $-30^{\circ}$  to  $+350^{\circ}\text{F}$ )

- The 200 mV/mil (7.87 mV/ $\mu\text{m}$ ) signal output is compatible with most Bently Nevada monitoring systems
- Our patented Tip Loc™ molding method keeps the polyphenylene sulfide (PPS) probe tip from twisting and vibrating
- Our patented Cable Loc™ design provides 23 kg (50 pounds) pull strength where the probe cable attaches to the probe tip
- Probe thread sizes include **M8 x 1, M10 x 1 and 1/4-28 UNF**, with case lengths up to 250 mm (9.9 inches)

# Proximity Transducer System



- Stainless steel probe case and connectors for superior corrosion resistance
- Stainless steel armored cable available on probe and cable
- Coaxial cable is **larger and stronger** than previous 190 probes
- New **Multi-Approvals** option provides both North American and European hazardous area approvals **in one option**.

The 3300 RAM Proximity Transducer System incorporates these latest design improvements and more. Many new features were based on your comments and suggestions. Our design team implemented these improvements after visiting numerous machine sites and



studying the special requirements of compressors. With hundreds of 3300 RAM Systems now operating worldwide, we have reached our goals of:

- Outstanding accuracy
- High reliability
- Rugged design
- Lower price than previous systems

## Machine applications

The 3300 RAM probe is our most accurate probe when measuring vibration and position on small shafts. Machine shafts as small as 34 mm (1.34 inches) in diameter can be measured using XY probes. Another advantage to the 3300 RAM probe's small size is its extremely narrow probe tip sensing area. With only a two times (2X) probe sensing area,

counterbores and targets as small as 10.2 mm (0.4 inch) can be measured with excellent results.

High speed centrifugal air compressors contain fluid film bearings. The dynamic stiffness is such that the rotor must move significantly for the motion to be detected on the casing. Proximity transducers, which directly measure shaft motion, are the obvious choice for measuring vibration on these machines.

In centrifugal air compressors, the high speed stage can approach 90,000 rpm. The RAM probe measures vibration amplitudes at twice this speed with only 1% signal roll-off. This 2X measurement is important for machinery diagnostics.

## Upgrades for 190 probes

The 3300 RAM Proximity Transducer System can replace our previous 3000 Series 190 Proximity Systems that have fiberglass and Tonox® probe tips. The 3300 RAM Probe is also available in special styles that replace the 190 probe versions having smooth body cases. These special cases are used on several different types of centrifugal air compressors.

Bently Nevada proximity probes have a proven track record of dependable service under extreme conditions. Their service life is virtually unlimited since the probe does not contact the rotating shaft and has no moving parts to wear out or degrade. For more information on the 3300 RAM Proximity Transducer System, contact your nearest Bently Nevada sales and service representative.